



Chinese Su-27 Flanker fighter makes fly-by  
at Anshan Airfield, China, March 24, 2007  
(DOD/D. Myles Cullen)

# PLA Reforms and China's Nuclear Forces

By David C. Logan

China is in the midst of sweeping military reforms that will affect the force structure, administration, and command and control mechanisms of the People's Liberation Army (PLA). The reforms have the dual goals of tightening political control and improving the military's ability to conduct joint operations. Among the major steps is the creation of the new PLA Rocket Force, which replaced the former Second Artillery in controlling China's nuclear forces and land-based ballistic and cruise missiles. Despite much attention paid to its new name and higher organizational status, the

Rocket Force appears to be the service least affected by the reforms.

## PLA-Wide Reforms

The Rocket Force's creation did not occur in isolation, but in the context of reforms that affected the missions and command arrangements for nearly all the Chinese military. The scope and significance of PLA reforms have been likened to those of the Goldwater-Nichols Department of Defense Reorganization Act of 1986.<sup>1</sup>

The Rocket Force was created alongside other new organizations, including a PLA Army (PLAA) headquarters and the

Strategic Support Force. Establishment of a separate headquarters will move the PLAA to a bureaucratic structure and status equivalent with the other services and ostensibly reduce army dominance within the PLA. Most senior positions within the new theater commands and the restructured Central Military Commission (CMC), however, are staffed by PLAA officers, so the effectiveness of this change remains to be seen.<sup>2</sup> The exact role and mission of the Strategic Support Force are still unclear but have been described as "the core of China's information warfare force" and appear to have control over a range of space, cyber, electronic warfare, and communications capabilities.<sup>3</sup> The Strategic Support Force has reportedly also been tasked with collaborating with industry to develop more high-tech capabilities.<sup>4</sup>

The PLA also replaced its old system of seven military regions (MRs) with five new theater commands. Under the old system, the air force, navy, and Second Artillery maintained peacetime control of their units, with command and control of air force and navy assets transferring to the war zone commander in the event of actual conflict.<sup>5</sup> By contrast, theater commanders will command ground, naval,

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and air forces assigned to their theaters during peace and war. The relationship between the services and the theater commands appears similar to the U.S. arrangement, with the services responsible for organizing, training, and equipping units as a “force provider” and the theater commands responsible for operational planning and execution.<sup>6</sup>

Experts have suggested a number of drivers for the recent reforms.<sup>7</sup> Reshuffling the PLA’s bureaucratic and administrative functions could be an attempt to eliminate corruption within the force and to enhance political control of the military. Operationally, the reforms appear aimed at creating a force better able to conduct the joint operations needed to “fight and win informationized local wars.” The upgrading of the Second Artillery to the Rocket Force is one piece of these broader reforms.

### The Former Second Artillery

The Second Artillery was created in 1966, just 2 years after China’s first successful nuclear test at Lop Nor.<sup>8</sup> Though work had begun on China’s missile systems a decade earlier, the Second Artillery was given responsibility for wielding these weapons. It was not an official military service (*junzhong*), but rather an “independent branch [*bingzhong*] that is considered equal to the services.”<sup>9</sup> Though the Second Artillery gradually attained most of the trappings of a full-fledged service, its official organizational status remained “one-half notch lower in bureaucratic rank.”<sup>10</sup> In official documents, references to the Second Artillery were less common than to the services, and its personnel wore army uniforms.

The Second Artillery underwent a significant change in its mission and force structure over the last 25 years. Though it originally focused on nuclear missions, the 1990s saw the introduction of the first conventionally armed units. Today, it is estimated that China possesses more than 1,200 conventional missiles, compared to under 300 nuclear ones.<sup>11</sup> Along with the rapid growth of its conventionally armed forces, the Second Artillery conducted an extensive modernization of

China’s nuclear program, moving from first-generation, silo-based, liquid-fueled, single-warhead missiles to an arsenal increasingly featuring road-mobile, solid-fueled missiles, some capable of carrying multiple warheads. China has also begun to develop and deploy a ballistic missile submarine (SSBN) force, though it is unclear what, if any, relationship it has with China’s land-based nuclear forces.

Compared with the other services, the Second Artillery had distinctive command and control arrangements. Prior to the reforms, MR commanders did not exercise peacetime command over naval and air forces in their region; these units would be reassigned only to a war zone headquarters (usually led by an MR commander) during an actual conflict. In contrast, Second Artillery officers were not dual-hatted as MR deputy commanders. Both wartime and peacetime command and control were highly centralized from the CMC. Some have even described a “skip echelon” system in which superior levels of command can bypass intermediate command units and communicate directly with lowest-level units.<sup>12</sup> Under such a system, the CMC might communicate directly with launch brigades in the field.

### The Rocket Force: More Continuity than Change

While the reforms include dramatic changes in the command and control arrangements of the other services, the Rocket Force appears largely untouched. Reports have emphasized continuity both in China’s nuclear policies and in Rocket Force command and control arrangements.

**Nuclear Strategy and Policy.** Media reports and official statements consistently emphasize that the creation of the Rocket Force will not entail a change in China’s fundamental nuclear strategy, and especially not a change in its no-first-use policy. Reporting on the creation of the Rocket Force, a *China Daily* article stated that China’s nuclear policy would remain unchanged: “Reiterating the no-first-use nuclear weapons policy and the country’s defensive nuclear strategy, [Ministry of National Defense Spokesman] Yang [Yujun] said China always keeps its

nuclear capability at the minimum level required for safeguarding its national security.”<sup>13</sup> In describing the Rocket Force, China’s leader, Xi Jinping, used language identical to that applied to the Second Artillery in the past, describing the new Rocket Force as “a fundamental force for our country’s strategic deterrent, a strategic pillar for our country’s great power status, and an important cornerstone in protecting our national security.”<sup>14</sup> The same rhetorical formulation was repeated by Xi in his 2012 address to the Second Artillery, suggesting the fundamental role of the new Rocket Force will mirror that of its predecessor.<sup>15</sup>

### Operational Command and Control.

The military reforms have resulted in a significant change in theater command and control, moving the PLA toward a model resembling the relationship between the U.S. Services and the combatant commands, in which the services train and equip the military forces, which are then commanded by the theater commands (*zhanqu*) in actual operations.<sup>16</sup> This relationship is captured by the new 12-character phrase used to describe the new organizational relationships after the reforms: the CMC is responsible for overall force management, the theater commands are responsible for operations, and the services are responsible for force-building (军委管总, 战区主战, 军种主).<sup>17</sup> The command and control structures of the Rocket Force, again, appear largely unchanged.

First, mainland commentary on the Rocket Force has consistently emphasized the need for strong central control. In announcing the creation of the Rocket Force, media reports have reiterated the importance of centralized high-level command for strategic missile forces.<sup>18</sup> An article in *Rocket Force News* stated that the Rocket Force is “a strategic military service directly controlled and used by the Central Party Committee, the Central Military Commission, and Chairman Xi.”<sup>19</sup> These comments suggest that centralized command continues to extend not only to nuclear units but also conventional ones.

Second, reports about the relationship between the services and the theater commands are notable for the absence



People's Liberation Army Navy marines stand at attention following demonstration of brigade's capabilities (U.S. Marine Corps/J.J. Harper)

of references to the Rocket Force. For example, according to media reports, the new theater commands will have dedicated forces from the army, navy, and air force. However, those reports did not mention forces of the newly formed Rocket Force, suggesting that its units will remain with their home bases.<sup>20</sup> The theater commands are reported to have two deputy commanders from “each of the three service branches,” presumably not including the Rocket Force.<sup>21</sup> In addition, a report on the recent reforms and the role of the theater commands stated that “each Theater Command’s Army organ, Navy organ, and Air Force organ cadres must talk about how to deeply grasp the strategic intentions of Chairman Xi and the CMC.”<sup>22</sup> Though this makes reference to institutions that came into existence only after the reforms (the theater commands and theater commands’ army organs), the Rocket Force is notably absent.

Third, reports on training intended to improve the operational relationship

between the Rocket Force and theater commands emphasize *coordination* between the Rocket Force and theater commands, eschewing any language suggesting direct command authority from the theater command to Rocket Force units.<sup>23</sup> A mock order in a training drill used the word *coordinate* (*peihe*) to describe the unit’s activities in relation to the theater command’s units (*zhanqu budui*). A photo essay reporting on Rocket Force joint training hosted on the Web site of the newly created Southern Theater Command stated that Rocket Force units conducted operations “according to newly revised joint operations war plans with the relevant units of each of the other services,” again suggesting a role of independent support rather than command subordination.<sup>24</sup>

One indicator of the Second Artillery’s relative independence vis-à-vis the military regions was the fact that the command geography of the Second Artillery did not map directly onto the former MR borders. The Second Artillery

had six missile bases commanding launch brigades and a seventh responsible for nuclear warhead storage and handling. Of the six operational bases, four were believed to command launch brigades garrisoned in different military regions. For example, Base 51, headquartered in Shenyang, oversaw not only two nuclear-armed launch brigades garrisoned in the former Shenyang MR but also one nuclear-armed launch brigade garrisoned in the former Beijing MR and one conventionally armed launch brigade garrisoned in the former Jinan MR.<sup>25</sup> A similar command geography involving Rocket Force bases commanding brigades in multiple theater commands appears to be in place after the recent military reforms.<sup>26</sup>

A review of open-source references to Rocket Force Military Unit Cover Designators (MUCD) suggests there also has not been a change in which launch brigades are assigned to which missile bases. A change in MUCDs would imply a change in the number or organization of launch brigades. However, a review of



2016 Internet references to the MUCDs of Second Artillery units showed that the internal organizational structure of the Rocket Force's launch brigades mirrors that of the Second Artillery.

## Elevation to Independent Service

Much of the reporting on the new Rocket Force has focused on its new status as a service. Whereas the Second Artillery was an independent branch, the newly formed Rocket Force is a full-fledged military service on par with the others. This may lead to an expansion of both personnel and mission set.

In some respects, the formal elevation of the Rocket Force to the level of a service merely codifies its *de facto* status. The Second Artillery's organizational clout had steadily grown in the last 15 years. Prior to the creation of the Rocket Force, the Second Artillery commander and other Second Artillery senior leaders enjoyed ranks and grades equivalent to those of their counterparts in the services. In 2004, Jing Zhiyuan, then-commander of the Second Artillery, and his navy and air force counterparts became *ex officio* members of the CMC. Rocket Force representation on the CMC continues today under Commander Wei Fenghe. The Second Artillery had the same constellation of bureaucratic structures as the services, including a Political Department, Logistics Department, Armaments Department, and Command Academy.

Despite this trend, many reports on the new Rocket Force have emphasized the significance of the force's higher status as a service. Previous writings about the Second Artillery's role in joint campaigns noted that while strikes conducted by Second Artillery units would be central to the importance of any operation, the Second Artillery as an institution would largely play an auxiliary or supporting role to the services.<sup>27</sup> However, a professor at the Rocket Force Command Academy predicted that the new force would be able to "fight independently" rather than merely "support[ing] other forces, a definition that is incompatible with the Rocket Force's capacity and actual role."<sup>28</sup>

Rocket Force members have stressed the independence and prestige that come with its new status. The Rocket Force has reportedly already begun implementing the internal bureaucratic adjustments necessary to elevate it to the status of a full military service,<sup>29</sup> including a roll-out of new Rocket Force uniforms.<sup>30</sup> Internal Rocket Force reports highlight the fact that Chairman Xi personally chose the name of the Rocket Force and bestowed a new flag to the force.<sup>31</sup> An article published in *Rocket Force News* reflecting on the significance of the force's elevation to the level of a military service noted that "the status of the Rocket Force as a military service is getting more important than ever before."<sup>32</sup> The article predicted the Rocket Force would see changes in force structure, status, and missions. Specifically, "the value and the capability of the Rocket Force should lie in the strengthening of the credible and reliable nuclear deterrence and nuclear counterstrike capabilities referenced by Chairman Xi, along with strengthening the establishment of intermediate-range and long-range precision strike forces and enhancing counterbalancing abilities."<sup>33</sup>

A Rocket Force political instructor, writing about the reforms, stated that the elevation to the level of a military service would bring commensurate transformation of the force's structure and elevation of its mission, writing that the new status as a full-fledged service means that "the Rocket Force is no longer a paper tiger, placing missiles on launch platforms to scare the adversary, but rather is a strategic iron fist ready anytime to launch missiles to intimidate the enemy," perhaps suggesting a greater warfighting role for the force.<sup>34</sup>

## Implications

Despite the reform's emphasis on joint command and control arrangements, Rocket Force command and control appears to remain highly centralized and not delegated to theater commanders, which may hamper effectiveness in future joint campaigns. The greater institutional independence of the Rocket Force vis-à-vis both the theater commands and other services may exac-

erbate this problem. It may be difficult to coordinate the actions of Rocket Force missile brigades and those forces assigned directly to a theater command in a fast-moving crisis without clear command authorities and an integrated communications network. The need to coordinate with other services will likely grow as the conflict progresses. This could be especially relevant in any future Taiwan contingency or operations seeking to employ China's anti-access/area-denial assets, which would require significant coordination among China's air, sea, and missile forces.

The PLA could have mirrored the changes to navy and air force command and control arrangements by transferring operational control of Rocket Force conventional units to the theater commands while keeping nuclear units under the strict centralized control of the force. PLA leadership, however, clearly eschewed such a choice (or Second Artillery leaders were able to resist such efforts). Past attempts to place missile units within other services appear to have ended in failure. For example, in the late 1990s, an army artillery brigade was transformed into a short-range ballistic missile brigade armed with DF-11 missiles otherwise operated only by the Second Artillery.<sup>35</sup> A second similar brigade was formed sometime later. But in 2010, both of these brigades were transferred to the Second Artillery.<sup>36</sup>

PLA leadership might have decided that maintaining the current force structure exploits economies of scale and operational synergies. Some of the missile systems operated by the Rocket Force include both conventional and nuclear variants. Even missiles of different systems may share logistics, maintenance, and training requirements. Transferring control of conventional units to the theater commands would likely have required the creation of parallel and redundant structures. As one expert notes, "personnel, logistics, and training requirements for only two SRBM [short-range ballistic missile] brigades proved unwieldy for the army when most SRBM units are assigned to the Second Artillery."<sup>37</sup>

There may also be operational reasons for maintaining current command and control arrangements for conventional missile units. Theater commands leaders, who are all army officers, probably lack familiarity with missile operations and Rocket Force units. CMC leaders, including Xi Jinping, may also want to maintain tight central control over China's conventional and nuclear missile systems given their unique ability to strike targets abroad and potentially initiate a conflict due to carelessness or poor judgment. The accidental launch in July of a Taiwanese anti-ship missile that killed a fisherman provided a sobering reminder that such concerns are not merely academic.<sup>38</sup>

Elevation to a full-fledged service may give the Rocket Force the institutional prestige and resources necessary to compete effectively with the other services for resources and missions. As the PLA rebalances away from traditional army dominance and slower economic growth leads to slower growth in military spending, inter-service rivalry, and competition to control emerging missions will likely become more intense.

Conventional missions and forces may present such a "growth area" to the Rocket Force. With growing PLA emphasis on conducting joint conventional operations, the force might seek to push to expand its conventional forces and missions. While China's relatively restrained nuclear strategy may limit the growth potential of the nuclear mission, conventional operations can more easily be used to justify an expansion in force size and mission set. The Rocket Force may already have a strong internal orientation toward conventional missions. It reportedly already controls more than 1,200 conventional short-range ballistic missiles,<sup>39</sup> compared to an estimated 160 nuclear-capable ones, and it is estimated that more than half of personnel are assigned to conventional forces.<sup>40</sup> In the past decade, officers who comprise the Rocket Force senior leadership were most likely to have served in Base 52, the force's premier conventional base opposite Taiwan.

Conversely, the Rocket Force maintains a comparative advantage over the other services in the nuclear realm. Chinese leadership views about the limited utility of nuclear weapons and guidance to build a "lean and effective" nuclear deterrent imply a cap on the size of nuclear forces and the missions assigned to them.<sup>41</sup> However, the Rocket Force could seek to capitalize on its unique nuclear role in a number of ways. First, it could push China's leadership to expand the role of nuclear forces and argue for an expanded force structure and mission set in ways that could potentially lead to more aggressive changes in overall strategy and policy.<sup>42</sup>

The Rocket Force might also make a play for operational control of China's emergent fleet of *Jin*-class SSBNs. A number of Chinese and American experts have predicted that China's future SSBN force could fall under the command of the Rocket Force, though few have offered specifics about how such a command arrangement might work.<sup>43</sup>

The PLA Navy has little to no experience controlling nuclear weapons as China built only one hull of the previous-generation *Xia*-class SSBN, which never conducted a single operational patrol.<sup>44</sup> To the extent that greater operational experience with nuclear weapons increases confidence and decreases the likelihood of accidents, mistakes, and misperceptions, centralizing nuclear control under the Rocket Force might improve strategic stability by reducing the risk of accidental or unauthorized launch. Conversely, the Rocket Force has no experience running a naval fleet of any kind, let alone the kinds of complex operations required to operate and protect an SSBN force. Regardless of future command and control structures, Chinese SSBNs would undoubtedly be staffed and operated by PLA Navy crews and serviced in PLA Navy ports.

Finally, the Rocket Force could push to gain operational control of conventional strategic assets such as the DF-21D anti-ship ballistic missile or direct ascent anti-satellite capabilities. Both of these weapons are based on ballistic missile systems already operated by the Rocket

Force, and their importance as strategic assets argues for strict centralized control.

China's sweeping military reforms have ushered in substantial changes in the relative status and relationships between different parts of the People's Liberation Army. The Rocket Force has emerged as arguably the biggest winner in the reforms. The navy and air force lost operational control of their forces to the theater commands, and the army suffered a reduction in both formal status and administrative power after the dissolution of the General Staff Department. The Rocket Force, on the other hand, appears to have maintained direct control of both its conventional and nuclear units, while also boosting its formal organizational status and strengthening its ability to compete against the other services for resources and missions. JFQ

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## Notes

<sup>1</sup> Phillip C. Saunders and Joel Wuthnow, "China's Goldwater-Nichols? Assessing PLA Organizational Reforms," *Joint Force Quarterly* 82 (3<sup>rd</sup> Quarter 2016), 68–75.

<sup>2</sup> Kenneth Allen, Dennis J. Blasko, and John F. Corbett, Jr., *The PLA's New Organizational Structure: What is Known, Unknown and Speculation (Part 1)*, China Brief 16, no. 3 (Washington, DC: Jamestown Foundation, February 4, 2016), available at <[www.jamestown.org/single/?tx\\_ttnews%5Btt\\_news%5D=45069&no\\_cache=1#.V3-5Gf7yIMs](http://www.jamestown.org/single/?tx_ttnews%5Btt_news%5D=45069&no_cache=1#.V3-5Gf7yIMs)>. For an argument that the reforms may actually strengthen the status of the People's Liberation Army (PLA) Army, see Phillip C. Saunders and John Chen, "Is the Chinese Army the Real Winners in PLA Reforms?" *Joint Force Quarterly* 83 (4<sup>th</sup> Quarter 2016).

<sup>3</sup> John Costello, *The Strategic Support Force: China's Information Warfare Service*, China Brief 16, no. 3 (Washington, DC: The Jamestown Foundation, February 8, 2016), available at <[www.jamestown.org/single/?tx\\_ttnews%5Btt\\_news%5D=45075&no\\_cache=1#.V3-ptf7yIMs](http://www.jamestown.org/single/?tx_ttnews%5Btt_news%5D=45075&no_cache=1#.V3-ptf7yIMs)>.

<sup>4</sup> Ibid.

<sup>5</sup> Saunders and Wuthnow.

<sup>6</sup> U.S.-China Economic and Security Review Commission, Hearing on Developments in China's Military Force Projection and Expeditionary Capabilities, Testimony of David M. Finkelstein, January 21, 2016, 114<sup>th</sup> Cong. 2<sup>nd</sup> sess., transcript available at <[www.uscc.gov/sites/default/files/USCC%20Testimony%202016\\_Finkelstein.pdf](http://www.uscc.gov/sites/default/files/USCC%20Testimony%202016_Finkelstein.pdf)>.

<sup>7</sup> Saunders and Wuthnow; David M. Fin-

kelstein, *Initial Thoughts on the Reorganization and Reform of the PLA*, CNA China Studies (Washington, DC: Center for Naval Analyses, January 2016), available at <www.cna.org/cna\_files/pdf/DOP-2016-U-012560-Final.pdf>.

<sup>8</sup> Bates Gill, James C. Mulvenon, and Mark Stokes, "The Chinese Second Artillery Corps: Transition to Credible Deterrence," in *PLA as Organization*, ed. James C. Mulvenon and Andrew N.D. Yang (Santa Monica, CA: RAND, 2002), 517–518.

<sup>9</sup> Michael S. Chase, "The PLA's Second Artillery Force as a Customer of China's Defense Industry," *Study of Innovation and Technology in China*, Research Brief 2013-15 (January 2013), 2.

<sup>10</sup> Gill, Mulvenon, and Stokes, 520.

<sup>11</sup> *Military and Security Developments Involving the People's Republic of China 2016*, Annual Report to Congress (Washington, DC: Office of the Secretary of Defense, 2016); Hans M. Kristensen and Robert S. Norris, "Chinese Nuclear Forces, 2015," *Bulletin of the Atomic Scientists* 71, no. 4 (July 2015).

<sup>12</sup> Kenneth W. Allen and Jana Allen, *Building a Strong Informatized Strategic Missile Force: An Overview of the Second Artillery Force with a Focus on Training in 2014* (Washington, DC: The Jamestown Foundation, 2015), 26, available at <http://jamestown.org/uploads/tx\_jamquickstore/Building\_A\_Strategic\_Missile\_Force.pdf>.

<sup>13</sup> Zhao Lei and Li Xiaokun, "3 New Military Branches Created in Key PLA Reform," *China Daily*, January 2, 2016, available at <www.chinadailyasia.com/nation/2016-01/02/content\_15366591.html>.

<sup>14</sup> The author thanks Joel Wuthnow for this observation. See Wang Shibin and An Puzhong, "Founding Ceremony for Army Leading Organization, Rocket Force and Strategic Support Force Held in Beijing," *China Military Online*, January 1, 2016, available at <http://cd.81.cn/content/2016-01/01/content\_6841020.htm>.

<sup>15</sup> "Xi Jinping: Building a Strong Informatized Strategic Missile Force," available at <http://news.xinhuanet.com/politics/2012-12/05/c\_113922221.htm>.

<sup>16</sup> Saunders and Wuthnow.

<sup>17</sup> "Xi Jinping: Comprehensively Implement Strategy to Reform a Strong Military, Resolutely and Unwaveringly Go Down the Road of a Strong Military with Chinese Characteristics," *Xinhua Online*, November 26, 2015, available at <http://news.xinhuanet.com/politics/2015-11/26/c\_1117274869.htm>.

<sup>18</sup> Yu Jinzhi, "China's Second Artillery Force Renamed to Rocket Force, What's the Mystery Behind Not Adding the Word Strategic?" *Sina News*, January 1, 2016, available at <http://mil.news.sina.com.cn/china/2016-01-01/doc-ixfnept3524560.shtml>.

<sup>19</sup> Huang Jinxin, "My Views on the Rocket Force as a Strategic Military Service," *Rocket Force News*, January 13, 2016.

<sup>20</sup> Allen, Blasko, and Corbett.

<sup>21</sup> Choi Chi-yuk, "The Rising Star in China's Military Tipped as Future Air Force Leader," *South China Morning Post*, June 17, 2016, available at <www.scmp.com/news/china/diplomacy-defence/article/1976523/rising-star-chinas-military-tipped-future-air-force>. This would be consistent with the relationship between the Second Artillery and former military regions. Unlike the services, Second Artillery officers did not serve as deputy commanders within the military region, illustrating the unique "vertical command" structure of the Second Artillery. See Roger Cliff, *Shaking the Heavens and Splitting the Earth: Chinese Air Force Employment Concepts in the 21<sup>st</sup> Century* (Santa Monica, CA: RAND, 2014), 23.

<sup>22</sup> "Rocket Force and Strategic Support Force Discuss Joint Warfighting," *PLA Daily*, February 3, 2016, available at <http://mil.huanqiu.com/china/2016-02/8496915.html>.

<sup>23</sup> Dan Qingwei, "Rocket Force Base Explores Standardization of Joint Operational Processes," *PLA Daily*, April 1, 2016, available at <http://military.people.com.cn/n1/2016/0401/c1011-28243986.html>.

<sup>24</sup> "Theater Command Rocket Forces Enter Joint Training Like a Fish Taking to Water," Southern Theater Command Web site, March 17, 2016, available at <http://nb.81.cn/content/2016-03/17/content\_6964576.htm>.

<sup>25</sup> Information on Second Artillery base and brigade locations and Military Unit Cover Designators is from Jeffrey Lewis, *Paper Tigers: China's Nuclear Posture* (New York: Routledge, 2014), 116–121; and Fiona S. Cunningham and M. Taylor Fravel, "Assuring Assured Retaliation: China's Nuclear Posture and U.S.-China Strategic Stability," *International Security* 40, no. 2 (Fall 2015).

<sup>26</sup> Based on analysis of Rocket Force base and brigade locations and reported theater command boundaries.

<sup>27</sup> John W. Lewis and Xue Litai, "Making China's Nuclear War Plan," *Bulletin of the Atomic Scientists* 68, no. 5 (2012), 54.

<sup>28</sup> Zhang Zhouxiang, "Rocket Force to Protect National Interests," *China Daily*, January 5, 2016, available at <http://usa.chinadaily.com.cn/opinion/2016-01/05/content\_22933648.htm>.

<sup>29</sup> She Linbo and Zang Ruijin, "How Does the Rocket Force Build From the Basic Level Under the New 'Services-Equip' System," *PLA Daily*, April 26, 2016, available at <www.81.cn/jmywyl/2016-04/26/content\_7023132.htm>.

<sup>30</sup> See remarks in "Defense Ministry's Regular Press Conference on June 30," *China Military Online*, June 30, 2016, available at <http://english.pladaily.com.cn/news-channels/2016-06/30/content\_7127994.htm>.

<sup>31</sup> "Deeply Implement Chairman Xi and the Central Military Commission's Decision, Work

Hard to Construct a Powerful and Modern Rocket Force on a New Starting Point," *Rocket Force News*, March 2, 2016.

<sup>32</sup> Huang Jinxin, "My Views on the Rocket Force as a Strategic Military Service," *Rocket Force News*, January 13, 2016.

<sup>33</sup> Ibid.

<sup>34</sup> Li Xuan, "From 'Force' to 'Service,' Rocket Force Must Shoulder Historic Heavy Responsibility," *Science and Technology Daily*, February 23, 2016, available at <www.81.cn/depb/2016-02/23/content\_6923516.htm>.

<sup>35</sup> Dennis J. Blasko, *The Chinese Army Today: Tradition and Transformation for the 21<sup>st</sup> Century* (New York: Routledge, 2012), 96.

<sup>36</sup> Mark Stokes, "Expansion of China's Ballistic Missile Infrastructure Opposite Taiwan," *Asia Eye*, available at <http://blog.project2049.net/2011/04/expansion-of-chinas-ballistic-missile.html>.

<sup>37</sup> Blasko, 96.

<sup>38</sup> Austin Ramzy, "Taiwan Navy Accidentally Fires Antiship Missile, Killing Fisherman," *New York Times*, July 1, 2016, available at <www.nytimes.com/2016/07/02/world/asia/taiwan-china-missile.html?\_r=0>.

<sup>39</sup> *Military and Security Developments Involving the People's Republic of China 2016*, 25.

<sup>40</sup> Hans M. Kristensen and Robert S. Norris, "Chinese Nuclear Forces, 2016," *Bulletin of the Atomic Scientists* 72, no. 4 (June 2016), 2; Jeffrey Lewis, "China's Belated Embrace of MIRVs," in *The Lure and Pitfalls of MIRVs: From the First to the Second Nuclear Age*, ed. Michael Krepon, Travis Wheeler, and Shane Mason (Washington, DC: Stimson Center, May 2016), 105.

<sup>41</sup> On China's nuclear strategy and views of nuclear weapons, see M. Taylor Fravel and Evan S. Medeiros, "China's Search for Assured Retaliation: The Evolution of Chinese Nuclear Strategy and Force Structure," *International Security* 35, no. 2 (Fall 2010); and Cunningham and Fravel.

<sup>42</sup> Lewis, "China's Belated Embrace of MIRVs," in *The Lure and Pitfalls of MIRVs*, 105.

<sup>43</sup> "Expert: Why Is the Second Artillery Being Elevated to the Rocket Force, the Fourth Military Service?" *Global Times*, January 9, 2016, available at <http://mil.huanqiu.com/observation/2016-01/8346721.html>; Kelsey Davenport, "China Elevates Nuclear Rocket Force," Arms Control Association, March 2016, available at <www.armscontrol.org/ACT/2016\_03/News/China-Elevates-Nuclear-Rocket-Force>.

<sup>44</sup> John Wilson Lewis and Xue Litai, *China's Strategic Seapower: The Politics of Force Modernization in the Nuclear Age* (Stanford: Stanford University Press, 1996); and Hans Kristensen, "China SSBN Fleet Getting Ready—But For What?" Federation of American Scientists, April 25, 2014, available at <https://fas.org/blogs/security/2014/04/chinassbnfleet/>.